

What is Claimed is:

1. A gas sampling assembly comprising:
  - a filter portion including a substantially tubular housing having an upstream first end and a downstream second end;
  - a sample collection portion including a body section having a sample chamber defined therein, wherein the body section is coupled to the downstream second end of the housing such that the housing and the body section define a unitary assembly,
  - a termination block positioned in the body section of the sample chamber so as to form a seal across an upstream end region of the sample collection portion; and
  - at least one hydrophobic fiber element disposed within the housing, the fiber element having an upstream closed end and a downstream open end, wherein the upstream closed end is positioned proximate the upstream first end of the housing, and wherein the downstream open end is coupled to the termination block.
2. The gas sampling assembly of claim 1, wherein the upstream closed end of the fiber element is a looped end formed by the fiber element being folded back on itself.
3. The gas sampling assembly of claim 1, further comprising a gas sampling line coupled to the upstream first end of the housing.
4. The gas sampling assembly of claim 3, further comprising a conduit in fluid communication with the sample chamber to permit communication of gases out of the sample chamber.
5. The gas sampling assembly of claim 1, wherein the housing and body section are integrally formed from a unitary material.

6. The gas sampling assembly of claim 1, wherein the body section includes:

a gas sample collection chamber defined in the body section upstream of the sample chamber and downstream of the termination block, the gas sample collection portion configured to collect filtered gases therein; and

a conduit defined in the body section upstream of the sample chamber and downstream of the gas sample collection chamber, the conduit communicating the gas sample collection chamber with the sample chamber.

7. The gas sampling assembly of claim 1, wherein at least one of the hydrophobic fiber elements is coupled to the termination block such that the downstream open end protrudes from a surface of the termination block in a direction toward the sample chamber.

8. The gas sampling assembly of claim 1, wherein all of the hydrophobic fiber elements are coupled to the termination block such that the downstream open ends do not protrude from a surface of the termination block.

9. The gas sampling assembly of claim 1, wherein the housing includes a fiber chamber defined therein in which at least the upstream closed ends of the fiber elements are located, wherein the body section includes a conduit communicating the sample chamber with a downstream end of the termination block, and wherein a diameter of the fiber chamber and a diameter of the conduit are substantially the same.

10. The gas sampling assembly of claim 1, wherein a plurality of hydrophobic fiber elements are coupled to the termination block such that the downstream open ends of the hydrophobic fiber elements are disposed in a linear array.

11. The gas sampling assembly of claim 1, wherein the hydrophobic fiber element is hollow.

12. A sidestream gas monitoring system comprising:

(a) a sampling line having a first end adapted to be connected to a patient circuit and a second end for carrying a flow of gas from a patient circuit;

(b) a gas sampling assembly comprising:

(1) a filter portion including a substantially tubular housing having an upstream first end and a downstream second end, wherein the upstream first end is connected to the second end of the sampling line,

(2) a sample collection portion including a body section having a sample chamber defined therein, wherein the body section is coupled to the downstream second end of the housing such that the housing and the body section define a unitary assembly,

(3) a termination block positioned in the body section of the sample chamber so as to form a seal across an upstream end region of the sample collection portion, and

(4) at least one hydrophobic fiber element disposed within the housing, the fiber element having an upstream closed end and a downstream open end, wherein the upstream closed end is positioned proximate the upstream first end of the housing, and wherein the downstream open end is coupled to the termination block; and

(d) a detecting system adapted to measure a constituent of gas contained within the sample chamber.

13. The system of claim 12, wherein the upstream closed end of the fiber element is a looped end formed by the hydrophobic fiber element being folded back on itself.

14. The system of claim 12, further comprising a conduit in fluid communication with the sample chamber to permit communication of gases out of the sample chamber.

15. The system of claim 12, wherein the housing and body section are integrally formed from a unitary material.

16. The system of claim 12, wherein the body section includes:  
a gas sample collection chamber defined in the body section upstream of the sample chamber and downstream of the termination block, the gas sample collection portion configured to collect filtered gases therein; and  
a conduit defined in the body section upstream of the sample chamber and downstream of the gas sample collection chamber, the conduit communicating the gas sample collection chamber with the sample chamber.

17. The system of claim 12, wherein at least one of the hydrophobic fiber elements is coupled to the termination block such that the downstream open end protrudes from a surface of the termination block in a direction toward the sample chamber.

18. The system of claim 12, wherein all of the hydrophobic fiber elements are coupled to the termination block such that the downstream open ends do not protrude from a surface of the termination block.

19. The system of claim 12, wherein the housing includes a fiber chamber defined therein in which at least the upstream closed ends of the fiber elements are located, wherein the body section includes a conduit communicating the sample chamber with a downstream end of the termination block, and wherein a diameter of the fiber chamber and a diameter of the conduit are substantially the same.

20. The system of claim 12, wherein a plurality of hydrophobic fiber elements are coupled to the termination block such that the downstream open ends of the hydrophobic fiber elements are disposed in a linear array.

21. The system of claim 12, wherein the hydrophobic fiber elements are hollow.